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Vol. 4, No. 10. WASHINGTON, D. C. May, 1935.

Agriculture.

Agriculture in southern Africa. By Clifford C. Taylor. 1935. 342p. U.S. Department of Agriculture. Technical bulletin no. 466.

Air Conditioning.

Air conditioning for California homes. By Baldwin M. Woods and Benedict F. Raber. 1935. 45p. California. Agricultural Experiment Station Bulletin no. 589.

Air Flow.

Vortices, eddies and turbulence as experienced in air movements. By W. Watters Pagon. Engineering News-Record. v. 114, no. 17. April 25, 1935. p. 582-586. Attempt to summarize broader aspects of problem of air flow as they affect civil engineering considerations.

Alcohol.

Alky-gas advocates organizing groups to promote program. National Petroleum News. v.27, no. 8. February 20, 1935. p. 12. Drive for alcohol in motor fuel, as farm prosperity measure, continues vigorously in middle west, with alcohol-gasoline associations being formed, and bills now in hoppers of several legislatures. Two years ago this drive was centered in Illinois and Iowa. This year area of activity has increased, with bills already introduced in Minnesota, Nebraska and North Dakota, and similar efforts in South Dakota. Purpose of these measures is to force use of alky-gas by levying only current tax rate on such fuels, and hiking rate substantially on straight gasoline.

Associations.

Implement dealers' associations. Revised to May 1. Farm Implement News. v.56, no. 10. May 9, 1935. p. 53.

Belts.

Rubber belts. Power. v.79, no. 5. May, 1935. p. 248-250. How made, how used, and where.

Blinds.

Shutters to the rescue! By Kenneth Edmunds. Better Homes and Gardens. v. 13, no. 3. November, 1934. p. 20-21.

Corrosion.

Underground corrosion: Discussion. By Thomas F. Wolfe and John R. Baylis. Proceedings of American Society of Civil Engineers. v. 61, no. 4, part 1. April, 1935. p. 591-594.

Cotton and Cotton Ginning.

History of Gullett gin. By E. H. Bostick. Cotton and Cotton Oil News. v. 36, no. 12. March 23, 1935. p. 22.

Some patents which have expired on cotton gin saws and ribs. By Charles A. Bennett. Cotton Ginners' Journal. v. 6, no. 7. April, 1935. p. 7, 16, 24, 28.

Dams.

Hydroelectric power in Washington. Part III. Brief on proposed Grand Coulee dams. By Carl Edward Magnusson. 1935. 29p. Washington. Engineering experiment station. Bulletin no. 78.

Drainage.

Drainage and irrigation, soil economic, and social conditions, Delta area, Utah. Division I. Drainage and irrigation conditions. By O. W. Israelsen. 1935. 70p. Utah. Agricultural experiment station. Bulletin no. 255.

Refinancing of drainage, levee, and irrigation districts. By Emil Schram. Agricultural Engineering. v. 16, no. 4. April, 1935. p. 151-154.

Droughts.

Drought conditions in eastern Oregon as of April 1, 1935. U.S. Agricultural Adjustment Administration, 1935. 29p. Multigraphed. Report of Conference, Portland, Oregon, April 13, 1935.

Drought menaces irrigation areas East of Rockies. Science News Letter. v. 27, no. 730. April 6, 1935. p. 213. In this region soil has been moisture-deficient for so long that any rains falling now will be needed to replenish subsoil water, and there will be that much less for reservoir storage.

Drought still holds empire in West, from coast to plains. Science News Letter. v. 27, no. 730. April 6, 1935. p. 213. Rainfall less than 50 per cent normal in two areas large as Maine; dust storms breed where rain failed.

Electric Service, Rural.

Progressive distribution. By Merrill DeMerit. Electrical World. v.105, no.9. April 27, 1935. p. 25-27. Distribution costs are less when designed at the outset to meet progressive growth.

Electricity on the Farm.

Bedford - continued progress in rural electrification. Rural Electrification and Electro-Farming. v. 10, no. 115. December, 1934. p.233-238. Progress has been rapid, and now area is approximately 80 per cent electrified.

Electric power and cooperation - a more abundant life. By Glenn Thompson. Hoosier Farmer. v. 19, no. 4. May, 1935. p. 18, 23.

Farm electrification statistics, 1934. C.R.E.A. News Letter. No. 12. April 1, 1935. p. 3-4.

Legislative foundation laid for rural electrification. By Frederic I. Barrows. Hoosier Farmer. v. 19, no. 3. April, 1935. p. 8, 32. Discussion of Indiana rural electric membership corporation act.

Rural electrification. By I. P. Blauser. Engineering Experiment Station News. Ohio State University. v. 7, no. 2. April, 1935. p. 17-19. Number of farms using central station electric service had increased by 1934 to more than 47,000, or approximately 22 per cent of farms in Ohio.

Rural electrification in Dumfriesshire. Rural Electrification and Electro-Farming. v. 10, no. 118. March, 1935. p. 331-334, 338-340. Account of scheme which, in almost incredibly short period, has resulted in electricity being available to practically all inhabitants of Dumfriesshire. Every deterrent kept out of general policy so that potential customers, large and small, may enjoy benefits of electricity without delay and expense.

Small electric driers for fruits and vegetables. By A. V. Krewatch. C.R.E.A. News Letter. no. 12. April 1, 1935. p. 7-9.

Soil sterilization by electric heat. By I. P. Blauser. C.R.E.A. News Letter. no. 12. April 1, 1935. p. 4-7. Chief advantages of element type of sterilizer are: 1. There is known definite connected load. 2. All soils can be treated similarly and independently of moisture content, and 3. Less danger in working with sterilizer. Disadvantages are: 1. Higher first cost 2. Higher operating cost, and 3. Very uneven heating of soil.

Engineering.

Modern engineering colleges. By N.W. Dougherty. Civil Engineering. v. 5, no. 5. May, 1935. p. 305-307. Study of the place of the college in the engineering field.

Undeveloped phase of engineering education. By Robert E. Doherty. General Electric Review. v. 38, no. 4. April, 1935. p. 168-174. Refers to education preparing for creative leadership in profession.

Erosion Control.

Dust. Wyoming Stockman-Farmer. v.41, no.4. April, 1935. p.1, 14-15.

Dust storms; their cause and suggested remedies. By R.I. Throckmorton. Engineering News-Record. v. 114, no. 119. May 9, 1935. p. 669-671. Drought and inadvisable farming methods have subjected 18,000,000 acres to wind erosion. Although more extensive than previously, current dust storms are not unprecedented in severity. Rain and changed methods of cultivation will save most of the areas.

Erosion control and reclamation charts; compiled from the most recent authoritative sources. By E. R. Raney and Donald Christy. 1935. 8p. Mimeographed. Soil erosion service. Wadesboro, N. C.

Facing the erosion problem. By H. H. Bennett. Science. v. 81, no.2101. April 5, 1935. p. 321-326.

Get data on soil erosion. By W. L. Powers. Oregon Farmer. v. 58, no.7. April 4, 1935. p. 13. First course in soil erosion has been offered at Oregon State college during the winter term. This course consisted of some fourteen lectures, recitations and a dozen laboratory periods of three or four hours' duration. Lecture subjects included extent and effect of erosion, geological aspects of erosion, measurement of rain, snow, runoff and washoff; methods of studying soil erosion; wind erosion and its control; farm windbreaks; shelter belts and wood lots; soil characteristics related to erosion; soil organic matter; soil granulation and erosion; terracing; gulley control; terracing machinery; vegetative cover, and soil erosion and land use, and summary of soil erosion measures.

Gullies; how to control and reclaim them. By C. E. Ramser. 1935. 34p. U.S. Department of Agriculture. Farmers' bulletin no. 1234.

Lost! 440 million tons. By C. W. Mullen. Farmer-Stockman. v.48, no. 4. February 15, 1935. p. 3. Flood control must begin with control of soil erosion.

Preventing soil erosion. Arkansas Farmer. v. 37, no. 21. February 15, 1935. p. 4-5.

Relation of grass cover to erosion control. By H. H. Bennett. Journal of American Society of Agronomy. v. 27, no. 3. March, 1935. p. 173-179. Successful plan of erosion control is going to call definitely for battling for more grass, more dense soil-stabilizing crops, and better adjustment of farm procedures to physical characteristics of land.

Soil anchors. By Henry W. Biedermann. p. 3, 23, 28. Nebraska Farmer. v. 77, no. 8. April 13, 1935. Wind erosion can be prevented by using practical methods suggested by crop experts.

Strip crops save soil losses! By C. W. Mullen. Farmer-Stockman. v.48, no.5. March, 1935. p. 5, 21.

Erosion Control. (Cont'd)

Suggestions for the stabilization of spillways, earth fills and terrace outlets by means of vegetation. By D. L. Gross. 1935. 3p. Mimeographed. U.S. Department of Agriculture. Forest Service. Circular T-3.

Trade has vital interest in current erosion plans. Implement and Tractor. v. 50, no. 9. May 4, 1935. p. 10-11. Belated interest is partly due to numerous governmental erosion projects in Middle West, which show possibilities in controlling to large extent losses in top soil, and which are likely to be followed by individual effort on part of owners of individual farms.

When the soil blows. By H. H. Finnell. Farmer-Stockman. v. 48, no.5. March 1, 1935. p. 9. Control calls for no over grazing, saving of stubble, tillage methods, cover crops, moisture conservation.

Wind erosion in the Great Plains. By F. L. Duley. Land, Today and Tomorrow. v. 2, no. 4. April, 1935. p. 5-8. Wind erosion can be controlled only by radical changes in cropping methods.

Farm Buildings and Equipment.

Dairy cattle breeding stall. Pacific Rural Press. v. 129, no. 10. March 9, 1935. p. 257. Dairy cattle breeding stall costs $40. to $50. for materisla.

Farm improvements. By L. R. Neel. Southern Agriculturist. v. 65, no.3. March, 1935. p. 5.

How farmers can improve farm property. By O. W. Shattuck. California Cultivator. v. 82, no. 5. March 2, 1935. p. 124, 142. Detailed list is given for benefit of those who may desire more specific information on various types of farm equipment which may be insured.

Farm Machinery and Equipment.

Basin method of planting row crops and a basin lister planter. By C.K. Shedd, E.V. Collins and J.B. Davidson. Agricultural Engineering. v. 16, no. 4. April, 1935. p. 133-136. Purpose of paper is to describe basin method of planting and basin lister, to call attention to some of obvious advantages of this method of planting, and to briefly discuss its probably utility. Benefits 1. Reduces water erosion of the soil. 2. Lessens danger of washing out seed or small plants. 3. Reduces tendency for water to accumulate in ponds at low points in relatively flat fields. 4. Conserves moisture.

Farming methods that have proved successful. By E. R. Parsons. Western Farm Life. v. 37, no. 2. February 15, 1935. p. 3. Review of experiences in farming on the Plains area.

Farm Machinery and Equipment. (Cont'd)

Flax asks for a harvester. Implement Record. v. 32, no. 5. May, 1935. p. 13. In handling and growing flax in addition to harvester, following equipment is required: Plow, disc pulverizer, and crowder for seed bed preparation and bordering. Either hoe or shoe type drill with press wheel is used with drag or packer behind. Drill with flute feed works more satisfactorily for flax than double run. On soft soil, either single disc, double disc or shoe type furrow opener is satisfactory, but on heavier soils shoe works more satisfactorily.

Machinery not a cause of unemployment. Northwest Farm Equipment. v.49, no.5. May, 1935. p. 36. American standard of living is measured by use of machinery. This is illustrated statistically by increase in number of gainfully employed from 38 millions in 1910 to 49 millions in 1930, net gain of 11 millions of workers. However, during same period, farm workers actually decreased from 12½ millions in 1910 to 10½ millions in 1930, a loss of 2 millions and industrial workers increased from 11½ millions in 1910 to 15½ millions in 1930, gain of four millions.

Machinery to control the field bindweed. By C. W. Smith. Agricultural Engineering. v. 16, no. 4. April, 1935. p. 142-148.

Mud-proof rice combine. Farm Implement News. v.56, no. 8. April 11, 1935. p. 31. This combine is of larger dimensions, has special wide, rolling tracks on rear and cleated, drum-type wheels on both front truck and header to lessen rolling resistance and to eliminate clinging mud.

Old Hawaiian mill restored. By T. T. Waterman. Facts About Sugar. v.30, no. 4. April, 1935. p. 151. Consists of pair of stone rollers. Two rollers were set vertically, and were operated by means of sweep propelled by animal power - horse, ox,or water buffalo. Sweep was attached to one roller, and as it went around and around this roller drove the other one through wooden cogs or gears.

Portable elevator as labor saving device on the dairy farm. By F. W. Atkeson and Hobart Beresford. Agricultural Engineering. v. 16, no.4. April, 1935. p. 149-150, 154.

Soybean harvesters for southern states. Farm Implement News. v. 56, no. 8. April 11, 1935. p. 31. For more economical harvesting of the crop, two types of soybean harvesters are needed in South - an improved single row horse-drawn harvester and a small combine with power take-off. If machine could be adjusted for harvesting small grain as well as soybeans, it would prove useful in other regions where farms are not large enough to justify purchase of larger combined harvester-thresher.

Study of power requirements and efficiency of threshing machines. By E. A. Silver and G. W. McCuen. Agricultural Engineering. v. 16, no.4. April, 1935. p. 137-141, 154. Study of power requirements and

Farm Machinery and Equipment. (Cont'd)

efficiency of threshing machines, made by department of agricultural engineering of Ohio Agricultural Experiment Station at Columbus, Ohio, has not been for purpose of comparing one make of machine with another. Objective has been to obtain certain facts relative to performance of individual threshers to that data could be studied for possible improvement of machine relative to their power requirements and their efficiency in threshing.

Survey shows big demand. Northwest Farm Equipment Journal. v. 49, no.5. May, 1935. p. 29-31. Extensive survey of conditions as they actually are in towns and country in midland northwest group of states, has been carried out by Commercial West. Inquiry has been made as to buying intentions in building materials, livestock, and in tractors, motor cars, trucks and general farm equipment.

Today's agriculture and machinery. By G. W. McCuen. Ohio Farmer. v.175, no. 6. March 16, 1935. p. 5. Progress in farming methods raises standard of living.

Vegetable seeder and cultivator for one-plow tractor. By D. C. Sprague. Farm Implement News. v. 56, no. 8. April 11, 1935. p. 24-25. Paper presented at meeting of Power and Machinery Division of American Society of Agricultural Engineers.

Vegetable tillage tools for the one-plow tractor. By D. C. Sprague. Implement and Tractor. v. 50, no. 8. April 20, 1935. p. 10-11, 14. Advent of one-plow tractor designed for needs of farms employing small power units, has afforded opportunities for substituting mechanical power for other types of power as well as for costly and arduous labor on market garden and truck farms.

Farm Mechanics.

Kinks for the repair shop. By Frank Bentley. Farm Implement News. v.56, no. 8. April 11, 1935. p. 30. Safe emergency jack block; welding away from the shop; small drain cock handles; untying knots; when weights are wanted.

Farmhouses.

Better homes by aid of Uncle Sam. Farmer-Stockman. v.48, no. 4. February 15, 1935. p. 9. From standpoint of expense, credit, interest rate, terms of repayment and general financial outlook time is opportune to catch up with our building, repairing and improving.

Look for better farm homes in Southwest. By Frank A. Briggs. Farm and Ranch. v. 54, no. 3. February 1, 1935. p. 2, 16. Out of the depression came greater appreciation of relation of agriculture to other industry. From it came better understanding of problems of agriculture, and means have been provided through which many of them will eventually be solved. Forward step in direction of better homes and higher living

Farmhouses. (Cont'd.)

standards has been a short one, but eventually stride will be lengthened as economic conditions improve, and opportunities now available for purchase of farms, remodeling farm homes and buildings, and purchasing modern conveniences become better understood.

Making rural home more convenient. By Deane G. Carter. Farm and Ranch. v. 54, no. 5. March 1, 1935. p. 3.

Fire Protection.

Manual of fire-loss prevention of the Federal fire council. 1934. 156p. U.S. National Bureau of Standards. Handbook no. 19.

Rural fire-prevention program in California. Extension Service Review. v. 6, nos. 1 and 2. January-February, 1935. p. 9, 10.

Flood Control.

Flood control and coast erosion under new Federal agency. Engineering News-Record. v. 114, no. 19. May 9, 1935. p. 688. Duties and functions of Resettlement Administrator as set forth by President are: (a) To administer approved projects involving resettlement of destitute or low-income families from rural and urban areas, including establishment, maintenance, and operation, in such connection of communities in rural and suburban areas. (b) To initiate and administer program of approved projects with respect to soil erosion, stream pollution, seacoast erosion, reforestation, forestation and flood control. (c) To make loans as authorized under Emergency Relief Appropriations Act of 1935 to finance, in whole or in part, purchase of farm lands and necessary equipment by farmers, farm tenants, croppers, or farm laborers.

Scioto flood project reported as uneconomic. Engineering News-Record. v. 114, no. 18. May 2, 1935. p. 648. Proposed flood project for Scioto and Sandusky rivers in Ohio was declared to be economically unwarranted by army engineers in their report to Board of Engineers for Rivers and Harbors. The plan called for a ten-mile canal near Marion through which flood waters from Scioto River would be diverted into Sandusky, also for construction of reservoirs to furnish hydro-electric power. Cost of project has been estimated at figures from $18,000,000 to $30,000,000, depending on alternate proposals for dams and reservoirs.

Hotbeds.

Its hotbed time. By J. R. Hepler. New England Homestead. v. 108, no.5. March 2, 1935. p. 10-11. Cross section showing construction of hot-bed.

Houses.

Bunk houses for California. Pacific Rural Press. v. 129, no. 10. March 9, 1935. p. 256. Two plans given. Contract cost of smaller house, including all plumbing and wiring, would probably be less than $1,000; that of larger design about $2,000.

Houses. (Cont'd)

Forest service experiments with plywood panel house. American Builder and Building Age. v. 57, no. 5. May, 1935. p. 34-35. It is experiment, indicating logical next development in nation-wide housing movement, and illustrates possibilities which industrialized wood fabrication has to offer in economical and efficient home building.

G. E's experimental house. Engineering Experiment Station News - Ohio State University. v. 7, no. 2. April, 1935. p. 3-4. Exterior walls of house and garage are constructed of Haydite block twelve inches in thickness for basement walls and eight inches elsewhere. Directly to blocks on exterior surface three coats of Portland cement stucco were applied. On interior surface wood furring strips were nailed to blocks and to these strips rocklath, with aluminum foil insulating surface, and two coats of plaster were applied.

Modern wood prefabrication may lower cost of building. By L. V. Teesdale. American Lumberman. no. 3046. April 27, 1935. p. 38-39. Building in which plywood was used for finish on outside walls, and for inside lining and roof sheathing, has just been completed on grounds of U.S. Forest Products Laboratory, Madison, Wisconsin.

Prefabricated homes present problems. American Lumberman. no. 3046. April 27, 1935. p.14. [illegible] We are probably facing greatest building era this country has ever seen. There is great pent-up demand for homes and farm buildings. Greatest talking point for prefabricators is increased efficiency, lowered cost and time saved by assembly on site.

Rural homes for non-agricultural workers - a survey of their agricultural activities. By F. L. Morison and J. H. Sitterlay. 1935. 34p. Ohio. Agricultural experiment station. Bulletin no. 547.

Insulation.

Facts about heat insulation. By J. L. Finck. Architectural Record. v. 77, no. 1. January, 1935. p. 65-68.

New mineral wool made of glass. By D. C. Simpson. Refrigerating Engineering. v. 29, no. 4. April, 1935. p. 195-196, 208. General characteristics: 1. Insulation coefficient such that minimum of heat be allowed to enter cooled space. 2. Permanence. 3. Resistance to settling. 4. Ease of handling and installation. 5. Light weight. 6. Low cost. Special characteristics: 1. Effect of moisture upon insulating coefficient of material. 2. Effect of moisture on permanence of material.

Irrigation.

California irrigation districts to get aid from Federal loans. Engineering News-Record. v. 114, no. 17. April 25, 1935. p. 586-587. Now that RFC loans have been approved for 34 of 90 active irrigation

Irrigation. (Cont'd)

districts in California, it is expected that on the whole financial obligations of water users there will be reduced by one-half. Total area of 90 districts is 3,200,080 acre of which half (1,679,676 acres) was cropped in 1933. Value of improvements required to bring water to these districts may be estimated from records of total cost (exclusive of that done by individual on his own property, which show expenditure of about $150,000,000 or approximately $50 per acre.

Effective portable spray irrigation layout. By F. E. Staebner. 1935. 6p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Irrigate like rain. California Cultivator. v. 82, no. 7. March 30, 1935. p. 195. As crop insurance there is nothing quite as effective as this system of irrigation, and many growers prefer to use it instead of checks and ditches, as it does not waste land; does not cause erosion, can be handled easily and quickly and requires no special preparation of fields or orchards.

Irrigation objectives. By O. W. Israelsen. Utah Farmer. v. 55, no. 18. April 25, 1935. p. 3.

Irrigation on corrugated ground. By C. Frank Lyon. Western Farm Life. v. 37, no. 2. February 15, 1935. p. 8. Few useful and time-saving tricks in irrigation.

Irrigation report. Nebraska Farmer. v. 77, no. 8. April 13, 1935. p. 33. Latest report of discharge of North Platte, South Platte and Platte rivers.

Irrigate with cold storage water. Idaho Farmer. v. 53, no. 4. p. 6. Plan is to divert water from creek in winter months and carry it under pressure to "glacier site." Here water will be broken up into fine spray by releasing it through sprinkling system over edges of timber-lined canyon on government reserve. Spray freezes as it falls and forms an artificial glacier, which, due to high altitude and northern facing, would not melt until well into summer. At this time creek is normally running only small flow of water and added supply from late melting glacier would greatly augment quality of water needed for irrigation during growing season of truck gardens, fruit orchards and other farm crops. Normal average rainfall in Wasco county is 16.39 inches, but often falls as low as 10 inches.

Overhead irrigation for sugar beets. By C. W. Geiger. Facts About Sugar. v. 30, no. 2. February, 1935. p. 53-54. Adaptation to large scale use of familiar principle proves saver of labor, time and water.

Use of a limited water supply. California Cultivator. v. 82, no. 7. March 30, 1935. p. 190-191, 207. Efficiency in application of water. Effect of original preparation of land. Overhead irrigation. Method of cultivation effect efficiency.

Irrigation. (Cont'd)

Water-rights of direct users held supreme in Colorado. Engineering News-Record. v. 114, no. 17. April 25, 1935. p. 604. Rights of farmers to water for direct irrigation have been held paramount to storage rights in a decision by Colorado supreme court. Court contended that law authorized storage only when water was not needed for direct irrigation.

Land.

Efficient use of Missouri lands. 1935. 37p. Multigraphed. Missouri Agricultural Experiment Station.

How shall we use our land? Henry A. Wallace. Extension Service Review. v. 6, no. 3. March, 1935. p. 17-18. Discussion of report recently submitted by National Resources Board, whose broad program the President recommends as a guide for future planning.

Lubrication.

Cotton gin lubrication. By Charles H. Wetzel. Cotton and Cotton Oil News. v. 36, no. 15. April 13, 1935. p. 12-13.

Meteorology.

Engineering meteorology. By W. Watters Pagon. Engineering News-Record. v. 114, no. 19. May 9, 1935. p. 665-668. Knowledge of certain aspects of science of meteorology is indispensable to civil engineer. Origin of air currents and effect of temperature, earth rotation, friction and altitude comprise portion of this knowledge. Movement, frequency and character of storms of various kinds are also basic information for engineer who designs structures subject to wind forces, just as rainfall and runoff are basic for hydraulic engineer. This article discusses some of these meteorological data from standpoint of their practicability for civil engineer.

Miscellaneous.

Annual report for the year 1928-1929. English verison. Part II. Egypt. Ministry of Public Works, Cairo, 1934. 375p.

Economic and social problems and conditions of the southern Appalachians. 1935. 184p. U.S. Department of Agriculture. Miscellaneous publication no. 205.

Government's responsibilities in science. By Karl T. Compton. Science. v. 81, no. 2102. April 12, 1935. p. 347-355. What is needed is bilateral program for putting science to work for national welfare. There is needed on one side cooperation of scientists of country generally, to assist government in putting work of its scientific bureaus on scale of maximum efficiency and value. There is needed on other hand new type of government leadership whereby scientific men of country may be brought together to make intelligent and co-

Miscellaneous. (Cont'd)

ordinated attack on great problems which are facing country at which science may offer hope of alleviation or solution.

Phone without batteries has variety of uses. Popular Mechanics. v. 63, no. 3. March, 1935. p. 338. Magnetic unit is efficient receiver and sensitive transmitter. Latest instrument embodies receiving and transmitting unit similar to magnetic loud speaker. When used as a microphone, sound waves vibrate diaphragm and, in turn, an armature. This vibration sets up variations in magnetic flux, inducing currents in coils which form part of magnetic system. These currents are transmitted to line, and vary in frequency and intensity with soundwaves of the voice. The unit operates as a polarized receiver.

Some responsibilities of science with relation to government. By John C. Merriam. Science. v. 80, no. 2087. December 28, 1934. p. 597-601. It is well known that in no application of science is need greater for aid of government to people and for contribution of science to meet needs of government than in questions touching development of agriculture. Fact that cultivation of plants in multitude of ways will always be possible as individual projects on small scale, means that much-needed application of constructive effort through science will in considerable measure be conducted by whole people or government. But vast difficulties of research in fundamentals of such subjects as genetics, photosynthesis, chemistry and physics of plant biology and influence of environment upon variation are so great that contribution of all available research must be given to aid governmental agencies if largest measure of success is to be attained.

Toward what goal? Henry A. Wallace. Bureau Farmer. v. 10. no. 8. April, 1935. Maryland Farm Bureau News Section. p. 7-8. Old efforts to attain unity failed to provide anything enduring, because they were based on greed, and prejudice, and fear, and hatred, on hope of banding together to resist, grab or conquer. Question I would raise is whether new unity can be built which is based on principles of economic balance and advancing culture.

Wave pressures on sea-walls and breakwaters: Discussion. By David A. Molitor. Proceedings of American Society of Civil Engineers. v.61, no. 4, part 1. April, 1935. p. 569-573.

Mississippi River.

It looks like the Government is really going to re-make the Mississippi valley. Southern Agriculturist. v. 65, no. 3. March, 1935. p.6, 46.n Discussion of reports by National Resources Board and Mississippi Valley Committee.

Paints and Painting.

Guard your property with paint. By Lenore Kent. Utah Farmer. v. 55, no. 17. April 14, 1935. p. 8. Lapse in paint payments will result in

Soil Moisture. (Cont'd)

spite of summer drouths. Whether actual results at harvest time are as good as would appear possible depends upon how efficiently water is conserved for crop that is growing. Some water will evaporate directly from surface soil into air. Usually this loss does not affect soil much deeper than cultivation. Only safe thing is to prepare land early and never permit any growth until regular crop of season can be seeded. Water for growing crop is even more precious than fertility. Lack of fertility can often be made up with fertilizers. But fertilizers without water are futile. Precaution is necessary to insure that stored soil water shall not be dissipated in any way.

Soils.

Fundamental needs of soils. By Ernest Braunton. California Cultivator. v. 82, no. 5. March 2, 1935. p. 132-135. To stir soil deeply and introduce organic matter seems to be basic moves necessary on all soils if agriculture is to succeed.

Simple and rapid methods for ascertaining the existing structural stability of soil aggregates. By George John Bouyoucos. Journal of American Society of Agronomy. v. 27, no. 3. March, 1935. p.222-227. Presents two simple methods and results obtained by them for ascertaininf existing aggregate structural stability of soils.

Spraying and Dusting.

Stationary spray plants save money. By T. H. McHatton. Progressive Farmer. v. 50, no. 4. April, 1935. p. 21. Such equipment permits applications on time, as soil conditions never interfere with even working under trees. Labor is also greatly reduced, as there are no portable machines to be handled and continually supplied with liquid. Breakdowns and pressure trouble are also avoided or reduced to a minimum. Gives installation cost of several stationary plants in Georgia.

Storage Houses.

Apple storage construction. By C. I. Gunness. New England Homestead. v. 108, no. 5. March 2, 1935. p. 4, 26-27.

Stream Flow.

Approach to determinate stream flow: Discussion. By Merrill M. Bernard. Proceedings of American Society of Civil Engineers. v. 61, no. 4. part 1. April, 1935. p. 540-546.

Subsistence Homesteads.

Homesteading 1934. Architectural Forum. v. 61, no. 6. December, 1934. p. 400-407. U.S. provides its industrial derelicts with cows, chickens, and a house on a patch of earth - dabbling in Communism,

Subsistence Homesteads. (Cont'd)

100 per centers call it; it may become America's new way of life.

Homesteads and subsistence homesteads. By Alvin Johnson. Yale Review. v. 24, no. 3. March, 1935. p. 443-447.

Will subsistence farming survive? By H. F. Kenyon. California Cultivator. v. 82, no. 6. March 16, 1935. p. 155, 183. If kitchen provides ample space for an electric cereal mill, if kitchen stove contemplates home baking after old manner, if candidate understands use of pressure cooker for canning, if there is provision for storage of surplus preserved or dried fruits and vegetables, and so on down the line, and if provision is made to re-educate candidates into that philosophy of life which can embrace such a program; so different from present normal in every community, then and only then can subsistence farming survive.

Sugar Beets.

Effect of variations in stand on yield and quality of sugar beets grown under irrigation. By H. E. Brewbaker and G. W. Deming. Journal of Agricultural Research. v. 50, no. 3. February 1, 1935. p. 195-210. Object was to determine response of sugar beets to increased space allotment per plant, and relationship which exists between weight and density and uniformity of stand.

Surveying.

Adjustment of a level net. By George H. Doll. Proceedings of American Society of Civil Engineers. v. 61, no. 4, part 1. April, 1935. p. 449-467. Two closely related methods of obtaining a "least squares" adjustment of closing errors in level net are described. First method involves writing, by inspection, of appropriate normal equations and their subsequent solution by process of converging instruments; second utilizes principle of successive distributions, and is suggested by Cross method of moment distribution. Both methods are well adapted to use of slide-rule and possess advantages of simplicity and brevity, as compared with conventional least squares solutions. They are intended to apply primarily to surveys of ordinary extent and accuracy. Beyond consideration that, in practice, one method may appeal more than other to given individual, reasons for presenting dual treatment of subject include following: (a) First method derives immediately from principal hypothesis of theory of least squares, and thus serves to substantiate correctness of second method; (b) process utilized (in first method) for solving normal equations may be successfully applied to various other types of engineering problems; and (c) parallel solutions show interrelations of two methods and suggest procedure that may be used to advantage in devising extensions of distribution method to new types of problems.

Surveying. (Cont'd)

First-order triangulation in Oklahoma. 1927 datum. By Leslie E. Shmidl. 1935. 147p. U.S. Coast and Geodetic Survey. Special publication no. 190.

Manual of plane-coordinate computation. By Oscar S. Adams and Charles N. Claire. 1935. 271p. U.S. Coast and Geodetic Survey. Special publication no. 193.

Tanks.

Fertilizer tanks are proving popular. By W. D. Pine. Pacific Rural Press. v. 129, no. 10. March 9, 1935. p. 247-250. Large pits, made of stone, concrete, and some of wood, hold these fertilizers, both solids and liquids from stables, for months at time until proper time to distribute over lands where pasture is needed or where cultivated crops are being grown. In great many cases these tanks are emptied by gravity through pipes, similar to our irrigation pipe, or by specially constructed spreaders. Water is generally added to fertilizer in tanks before spreading.

Terracing.

Asphalt terrace outlet. By J. M. Downing. The Land, Today and Tomorrow. v. 2, no. 4. April, 1935. p. 22-24.

Checking construction of terraces. By H. B. Roe. 1935. 1p. University of Minnesota. Agricultural extension division. Agricultural Engineering News-Letter no. 37.

Memorandum for E.C.W. camps in Nebraska relative to terraces and other erosion control structures. By C.A. Frye and I.D. Wood. 1935. 14p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

More terracing made possible. Farm and Ranch. v. 54, no. 3. February 1, 1935. p. 20. Joint arrangement has been worked out between Texas A. and M. College Extension Service and Texas Rural Communities, Inc. (rural relief agency), for co-operative terracing program. County authorities will be expected, generally, to supply implements, farmers who wish to terrace their land will be expected to list it with county conservation committee, and Texas Rural Communities will determine whether common relief labor is available for the work. All conservation projects will be on a self-liquidating basis.

Terraces won't stay level! Horace J. Harper. Farmer-Stockman. v.48, no. 6. March 15, 1935. p. 3. Unless terrace outlets are properly baffled, gullies soon start cutting back across field and problem of controlling gully is greater than original problem of building effective baffle.

Terracing farm lands in Georgia. By G. I. Johnson, W. N. Danner, jr., F. W. Peikert. 1935. 24p. University of Georgia. Agricultural Extension Service. Bulletin no. 394.

Terracing. (Cont'd)

Terracing saves Georgia land. By Harry L. Brown. Extension Service Review. v. 6, no. 3. March, 1935. p. 19-20.

Winged plow cuts terracing costs. Farmer-Stockman. v. 48, no. 5. March 1, 1935. p. 4. Advantages: 1. Cheap. 2. Convenient.

Tires.

Most important development of last fifteen years. By Frank J. Zink. Implement and Tractor. v. 50, no. 8. April 30, 1935. p. 12-13. Success of rubber tires on tractors is expected to result in installation on combines, hay presses, corn pickers, mowers, wagons and heavier field equipment.

Tractors.

Farm experience with rubber tired tractors. By J. B. Torrance. Northwest Farm Equipment Journal. v. 49, no. 4. April, 1935. p. 32-34. Reports indicate that rubber tires are winning place as part of equipment for farm tractor.

Garden tractor-cost and upkeep. Market Growers Journal. v. 56, no. 9. May 1, 1935. p. 204, 207. Latest cost figures gained by experience of past few years.

Water Supply.

Artesian water in Somervell County, Texas. By Albert G. Fiedler. 1934. 86p. U.S. Geological Survey. Water-supply paper no. 660.

Central Valley water project. By H. W. Johnstone. California Cultivator. v. 82, no. 7. March 30, 1935. p. 194. Without central valley water project being completed in its entirety San Joaquin valley will and must stand still. Development must cease for water level has been lowering every year, and there are spots where it has become uneconomical to pump great depth necessary to get water.

Measuring Ohio's rivers. By H. P. Brooks. Engineering Experiment Station News. Ohio State University. v. 7, no. 2. April, 1935. p. 15-16. Pt. V. River flow in 1934 compared with that of 1930. Chart gives rainfall and run-off of selected Ohio streams, 1930-34.

Mouse river area. Water utilization plan for the Mouse river in North Dakota. By Francis R. Kenney. 1935. 24p. Mimeographed. U.S. Agricultural Adjustment Administration.

Ohio River: its future as a water-supply source. By H. W. Streater. Engineering News-Record. v. 114, no. 18. May 2, 1935. p. 612-615.

Water Supply. (Cont'd.)

Navigable stream, receiving the drainage from vast area, and traversing six states, the Ohio river presents a difficult health problem. Statement of how collateral uses of a generous supply source modify the problem of using it for public water supply.

Ohio valley well supplies subject to slow reduction of capacity. By O.E. Meinzer. Engineering News-Record. v. 114, no. 18. May 2, 1935. p. 621-622. Safe yield of a multitude of small water systems in the Ohio drainage basin that draw on subsurface storage is limited by the underground basin's extent, the rate of recharge and the permeability of the subsurface materials. Many well systems are appraoching depletion from long-continued over-draft pumping.

Significance of Boulder Canyon project. By Walker R. Young. Civil Engineering. v. 5, no. 5. May, 1935. p. 279-283. Considerations leading to vast undertaking for regulation, water supply and power.

Water consumption rises. Many supplies require expansion. By Nicholas S. Hill, Jr. Engineering News-Record. v. 114, no. 18. May 2, 1935. p. 616-618. Records of large number of communities show that consumption of water has been rising steadily since 1933 in all sections of the country. Numerous communities found to need additions to their source of supply.

Water spreading practices on San Gabriel river. By Morgan J. Pierce. California Cultivator. v. 82, no. 7. March 30, 1935. p. 187, 207.

Water System.

An every-hour necessity - running water. By John C. Myers. Electricity on the Farm. v. 8, no. 4. April, 1935. p. 7, 8, 17. Desire and need among rural dwellers had been recognized many years ago by manufacturers of pumps and water systems and electrical utilities, who have been cooperating in effort for rural electrification with the purpose of reducing to minimum cost of installation of electricity and water systems used in rural home so that now both installation and operating expense is about one-half what it was, and is very cheap for service and comfort given. United States Government has given added stimulus to this effort by its interest in wishes expressed in its survey, and has shown its desire to improve this condition in recognizing need of better water supply systems in house by making it possible under Federal Housing Plan to secure loans to cover not only cost of water systems and its installation but also cost of digging or drilling well. Early last year there was inaugurated plan to bring to attention of rural dwellers advantages of running water. This plan is being conducted by Electric Water Systems Council, composed of manufacturers of pumps and water systems and representatives of electrical utilities and Committee on Relation of Electricity to Agriculture, and is endorsed by agricultural colleges, county agents and others.

Use of limited water supply. California Cultivator. v. 82, no. 7. March 30, 1935. p. 190-191, 207. Efficiency in application of water. Effect

Water System. (Cont'd)

of original preparation of land. Overhead irrigation. Methods of cultivation affect efficiency.

Weirs.

Influence of two secondary factors in weir measurements. By Charles William Harris. 1935. 14p. Washington. Engineersing experiment station. Bulletin no. 81.

Windows.

How to make leak-tight, economical windows. By Oscar G. Knecht. American Builder and Building Age. v. 57, no. 5. May, 1935. p. 56-57. Tells how to avoid leaky windows in stucco houses.

Wood.

Shrinking and swelling of wood. By Alfred J. Stamm. Industrial and Engineering Chemistry. v. 27,no. 4. April, 1935. p. 401-406. Factors affecting dimension changes of wood resulting from moisture content changes are discussed. Simple relationship is shown to exist between shrinkage and density of small specimens of wood dried under practically stress-free conditions, which indicates that volumetric shrinkage is practically equal to volume of water lost below fiber-saturation point and that change of fiber cavity dimensions is small. Deviations from this relationship caused by drying stresses are explained. Date for swelling of wood in aqueous electrolyte solutions and in dry organic liquids are presented and considered from standpoint of swelling theories. Data on replacement of water in swollen wood by other liquids are presented.

Thermodynamics of the swelling of wood. By Alfred J. Stamm and W. Karl Loughborough. Journal of Physical Chemistry. v. 39, no. 1. January, 1935. p. 121-132.

Wood - its use in architectural design. By Arthur McK. Stires. American Architect. v. 146, no. 2629. January, 1935. p. 9-33.